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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,125	02/07/2001	Masumi Sakai	0800239.0129	7697

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EXAMINER	
LAVARIAS, ARNEL C	

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/779,125	Applicant(s) SAKAI, MASUMI	
	Examin r Arnel C. Lavarias	Art Unit 2872	

-- Th MAILING DATE of this communication appears on the cov r sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 September 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/3/03 in Paper No. 13 has been entered.

Response to Amendment

2. The Examiner notes that pending Claims 1-17 as presented in the submission filed 9/3/03 in Paper No. 13 were previously presented in the submission filed 1/22/03 in Paper No. 10.

Response to Arguments

3. The Applicant's arguments filed 9/3/03 in Paper No. 13 have been fully considered but they are not persuasive. The Applicant argues that the cited art of record fails to teach or reasonably suggest the claimed method of PDI control adapted to a furnace-type atomic spectrophotometer such that the indicial response of the PDI control is made variable according to the kind of the target element and conditions of the measurement. However,

the Applicant has failed to provide any evidentiary support to show how or why the cited art of record fails to teach or reasonably suggest the claimed invention.

4. Claims 1-17 are rejected as follows.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egan et al. (U.S. Patent No. 4159876), of record, in view of Pettit et al. (U.S. Patent No. 4669040), of record.

Egan et al. discloses a furnace-type atomic absorption spectrophotometer comprising a tube for heating a sample (See 2 in Figure 1; col. 3, lines 27-59), monitoring means for monitoring temperature of the tube (See upper portion of Figure 1, minus the DC-AC Converter and workhead; circuitry around 21, including 12, R_1, and 21 in Figure 5) and outputting a monitored value indicative of the monitored temperature (See 15 in Figure 5), heating control means (See lower portion of Figure 1, including the DC-AC Converter and workhead; Lower portion of Figure 5; Figure 6) for controlling heating current for heating the tube such that the monitored value will approach a specified target temperature value, and parameter setting means (See for example 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 5, lines 5-17) for setting parameters according to conditions of

measurement and thereby adjusting a response characteristic of the heating control means when the tube is heated be the heating control means (See col. 3, line 1-col. 6, line 7). Egan et al. additionally discloses the parameter setting means including an input device for allowing a user to input parameters (See 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 4, lines 5-40), and an input device for allow a user to input a condition corresponding to the parameters (See 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 4, lines 5-40). Egan et al. also discloses that the monitoring means monitors values indicative of the temperature of the tube (See 15 in Figure in Figure 5; col. 4, lines 52-68). Egan et al. lacks the heating control means *digitally* controlling heating current for heating the tube. However, Pettit et al. teaches a self-tuning digital PID controller for applications such as plastic extruders and continually operable furnaces and ovens (See col. 1, lines 20-44; col. 13, lines 46-62). In particular, the PID controller is able to determine the appropriate PID tuning parameters, which include that standard proportional, integral, and differential parameters (See Abstract; col. 7, lines 12-25), and set the system to utilize these parameters (See col. 7, line 12-col. 8, line 61). Additionally, the self-tuning PID controller includes a microprocessor and non-volatile electrically alterable read-only memory (See col. 9, lines 33-55) to digitally process and store the calculated parameters for later use. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the self-tuning PID controller, as taught by Pettit et al. in the furnace-type atomic absorption spectrophotometer as disclosed by Egan et al. One would have been motivated to do this to provide automated control of the determination of

characteristic furnace parameters, as well as provide automated and self-tuning functions as the furnace characteristics change over time.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Egan et al. in view of Pettit et al. as applied to Claims 1-2 above, and further in view of Clishem et al. (U.S. Patent No. 3818112), of record.

Egan et al. in view of Pettit et al. discloses the invention as set forth above in Claims 1-2. Egan et al. in view of Pettit et al. additionally discloses the use of silicon controlled rectifiers (SCR's) in the heating control for the tube (See 17 in Figure 5 of Egan et al.; col. 4, lines 18-40). Egan et al. in view of Pettit et al. lacks the heating control means controlling the heating current by a phase control method and the quantity of a specified operation is a firing angle. However, Clishem et al. teaches that electrical furnaces can be temperature controlled using SCR's by controlling the firing angle (See Figure 6) of the SCR's, thus limiting the amount of current passing through the heating elements (See 80, 82 in Figure 5A and 5B; col. 4, line 26-col. 5, line 5). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to control the firing angle of SCR's to adjust the amount of current provided to a furnace, as taught by Clishem et al., in the furnace-type atomic absorption spectrophotometer as disclosed by Egan et al. in view of Pettit et al. One would have been motivated to do this to take advantage of the higher reliability provided by SCR's since they have no mechanical parts that would likely fail.

8. Claims 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egan et al. in view of Pettit et al. as applied to Claims 1-10 above, and further in view of Schmider et al. (U.S. Patent No. 4225234), of record.

Egan et al. in view of Pettit et al. discloses the invention as set forth above in the previous rejections. Additionally, Egan et al. in view of Pettit et al. discloses the response characteristic being an indicial response characteristic at a time of raising temperature (See for example 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 5, lines 5-17 of Egan et al.; disclosure of Pettit et al.). Egan et al. in view of Pettit et al. lacks the parameter setting means adjusting parameters according to kinds of elements to be detected. However, Schmider et al. teaches a flameless atomic absorption spectrophotometer apparatus and method wherein a control panel of a programmable digital controller is used to provide input parameters to control various aspects of the flameless atomic absorption spectrophotometer, such as numerical values for the temperatures, slope of the temperature ramps, duration of temperature plateaus, and gases used during the temperature ramping and plateaus (See col. 3, line 11-col. 4, line 26). The Examiner notes that the atomization of specific elements is highly dependent on the above parameters (i.e. the atomization of copper requires a set of parameters that is different from the atomization of calcium); hence one skilled in the art is certainly expected to adjust these parameters, whether manually or automatically, based on the element to be analyzed. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the parameter setting means adjust parameters according to kinds of elements to be detected, as taught by Schmider et

al., in the spectrophotometer of Egan et al. in view of Pettit et al. One would have been motivated to do this to increase the sensitivity and signal-to-noise ratio of the measurement system, while reducing interfering signals from other materials that may be present in the sample, such as volatile solvents, excess water, and other excess organic and inorganic materials.

Conclusion

9. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Arnel C. Lavarias
10/24/03

Thong Nguyen
Primary Examiner